

CLAIMS

What is claimed is:

1. An apparatus comprising:
a first layer having a first at least one interconnect formed in an interlayer dielectric (ILD);
a second layer formed over the first layer, the second layer having a second at least one interconnect;
a third layer formed over the second layer, the third layer defining at least one air gap between the second at least one interconnect and the third layer; and
at least one shunt selectively covering the first and second at least one interconnects.
2. The apparatus of claim 1, further comprising a barrier layer to support the first and second at least one interconnects.
3. The apparatus of claim 2, wherein the barrier layer has a thickness of between 50 and 500 Angstroms.
4. The apparatus of claim 1, further comprising:
at least one via having a via plug, the via plug is selected from the group consisting of cobalt and nickel.
5. The apparatus of claim 4, wherein the via plug is deposited using electroless deposition.

6. The apparatus of claim 1, wherein the second layer comprises a first sublayer and a second sublayer, the first sublayer is between the first layer and the second sublayer, and the second sublayer is between the first sublayer and the third layer, the first sublayer comprising an ILD, and the second sublayer comprising air.

7. The apparatus of claim 6, wherein the second at least one interconnect is within the second sublayer.

8. The apparatus of claim 1, wherein the second layer comprises air.

9. A method comprising:

forming a first layer comprising an interlayer dielectric (ILD) a first at least one interconnect;

forming a second layer over the first layer, the second layer having a second at least one interconnect;

depositing at least one shunt over the first and second at least one interconnects;

forming a third layer over the second layer; and

evaporating a portion of the second layer to create at least one air gap between the second at least one interconnect and the third layer.

10. The method of claim 9, wherein creating a first and second at least one interconnect further comprises depositing a barrier layer over the ILD to support the first and second at least one interconnects.

11. The method of claim 9, wherein forming a second layer comprises:
 - depositing a second ILD over the first layer;
 - patterning at least one recessed feature in the second ILD;
 - depositing a conductive material in the at least one recessed feature;
 - etching the second ILD to remove a portion of the second ILD; and
 - depositing a sacrificial ILD on the first layer in the place of the portion of the second ILD.
12. The method of claim 11, wherein evaporating a portion of the second layer comprises evaporating the sacrificial ILD.
13. The method of claim 9, wherein forming a second layer comprises:
 - creating a first sublayer comprising a second ILD on the first layer; and
 - creating a second sublayer comprising a sacrificial ILD on the first sublayer.
14. The method of claim 13, wherein evaporating a portion of the second layer comprises evaporating the sacrificial ILD.
15. A method, comprising:
 - forming a first ILD having a first at least one interconnect;
 - depositing a first at least one shunt on the first at least one interconnect;
 - forming a layer over the first ILD, the layer comprising a first sublayer and a second sublayer, the first sublayer comprising a second ILD and the second sublayer comprising a sacrificial ILD;

forming a second at least one interconnect in the second layer;
depositing a second at least one shunt on the second at least one interconnect;
depositing a third ILD over the layer; and
evaporating the sacrificial ILD.

16. The method of claim 15, wherein depositing a first at least one shunt and depositing a second at least one shunt comprises using electroless deposition.

17. The method of claim 15, wherein the first and second at least one shunt are chose from the group consisting of cobalt and nickel.

18. The method of claim 15, further comprising:
forming at least one via in the first sublayer, the at least one via is chosen from the group consisting of cobalt and nickel.

19. A method, comprising:
forming a first ILD having a first at least one interconnect;
depositing a first at least one shunt on the first at least one interconnect;
forming a second ILD, the second ILD having a second at least one interconnect;
depositing a second at least one shunt on the second at least one interconnect;
etching the second ILD to remove a portion of the second ILD;
depositing a sacrificial ILD over the first ILD;
depositing a third ILD over the sacrificial ILD; and
evaporating the sacrificial ILD.

20. The method of claim 19, wherein the first and second interconnects comprise electrolessly deposited cobalt or nickel.

21. The method of claim 19, further comprising forming at least one via in the second ILD, the at least one via is chosen from the group consisting of cobalt and nickel.